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GEOCARPON MINIMUM (CARYOPHYLLACEAE), NEW TO LOUISIANA

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ABSTRACT

The presence of *Geocarpon minimum* is documented in Louisiana for the first time. This federally threatened species is found in two saline prairies in Winn Parish, located in north-central Louisiana. The sites are the southernmost known for this species. Associated vascular plant taxa and an ecological description of saline prairies supporting this taxon in Louisiana are provided.

KEY WORDS: Louisiana, *Geocarpon minimum*, Caryophyllaceae, floristics, saline prairie

Geocarpon minimum Mackenzie (Caryophyllaceae) is known from southwestern Missouri, and northwestern and southern Arkansas, where it is apparently restricted to sandstone glades and saline soil prairies, respectively (Pittman 1988, 1992; Tucker 1983). The taxon was listed by the U.S. Fish and Wildlife Service as threatened in July, 1987. Following discovery of a saline prairie in Winn Parish, a survey was conducted at the site in February, 1990,

in hopes of locating *Geocarpon minimum*. This search proved successful, and the species was found at an additional site in Winn Parish in 1991. The sites are the southernmost known for this taxon. Collection data are as follows:

> *Geocarpon minimum* Mackenzie. UNITED STATES. Louisiana: Winn Parish: Graminoid-dominated, high phase saline prairie ca. 4 km NW of Tullos, Louisiana, 2.4 km W of Castor Creek, near Saline Creek, in SW/4 Section 15, T10N, R1E; Latitude 31°50′38″N, Longitude 92°21′44″W. Plants in two separate prairie openings, approximately 275 meters apart. Sitename = Saline Creek Prairie. 13 March 1990 (*McInnis et al. 3979* LSU); Winn Parish: High phase saline prairie ca. 5.6 km NNW of Tullos, Louisiana, ca. 1.6 km W of Castor Creek, in SW/4 Section 2, T10N, R1E; Latitude 31°52′24″N, Longitude 92°20′32″W. Plants in four separate locations in prairie. Sitename = Castor Creek Saline. 6 March 1991 (*McInnis 4081* NLU).

The saline prairies supporting *Geocarpon minimum* in Louisiana are found on well-drained Pleistocene terraces associated with Castor Creek. The adjacent surficial Tertiary formation is the Cockfield Formation (Groat & Roland 1984). The natural plant community is dominated by certain shallow-rooted species of grasses, sedges, and forbs. Fruticose lichens and mosses are significant components of the community. Woody plants are absent or present in limited numbers. In general, vegetative cover varies from nearly 100% herbaceous cover in graminoid dominated areas to sparsely vegetated barren-like areas (approximately 50% herbaceous cover) to practically no cover in places termed "slick spots". Slick spots are small, scattered, circular areas within prairies where depth to the sodic horizon is very shallow or the horizon is exposed, and consequentially, they are extremely inhospitable to plant growth (Smith & McInnis 1990). The slick spots vary in size from less than one-half meter to over two meters.

The plant community of the saline prairies has been determined primarily by extreme and unusual soil characteristics. The soil is classified as Brimstone Silt Loam, a fine-silty, siliceous, thermic Glossic Natraqualf. High exchangeable sodium (and probably magnesium) levels in the soils have generated extreme soil conditions for plant growth, including relatively high alkalinity, very poor movement of water and air in the soil, resistance to wetting that induces droughty conditions, and a sodic horizon in the subsoil (B horizon) that produces physical attributes similar to a dense clay hardpan that is exceedingly resistant to root penetration. The soil contains relatively high levels of certain water-soluble salts, particularly in the subsoil, that are injurious to plants and may produce alkali chlorosis and mortality. Trace elements may be deficient or present at toxic levels due to high salt content (U.S. Dept. Agriculture, in press).

Geocarpon minimum occurs in relatively level, thinly vegetated, barren-like areas near the edges of slick spots. Plants occur most often in association with bryophytes and lichens that cover unvegetated soil among the relatively widely spaced vegetation. *Geocarpon* is found mostly in small groups rather than single individuals, and is scattered between fruticose lichens (*Cladonia* spp.) and other low-growing, small-sized vegetation. Commonly occurring associates include various mosses, liverworts, lichens, and the blue-green alga *Nostoc* sp., and the vascular plants *Anemone caroliniana* Walt., *Agrostis elliotiana* Schult., *Aristida* sp., *Bigelowia nuttallii* Anderson, *Callitriche nuttallii* Torr., *Centunculus minima* L., *Coreopsis tinctoria* Nutt., *Hedeoma hispidum* Pursh, *Hedyotis australis* Lewis & Moore, *Hedyotis crassifolia* Raf., *Hedyotis rosea* Raf., *Iva angustifolia* DC., *Krigia occidentalis* Nutt., *Luzula bulbosa* (Wood) Rydb., *Nothoscordum bivalve* (L.) Britt., *Oenothera linifolia* Nutt., *Plantago elongata* Pursh, *Poa annua* L., *Scirpus koilolepis* (Steud.) Gl., *Spergularia echinosperma* Čelak, *Talinum parviflorum* Nutt., *Tillaea aquatica* L., and *Tradescantia occidentalis* (Britt.) Smyth.

Subsequent field surveys of other saline prairies in Louisiana have not yielded any additional populations of *Geocarpon minimum* (McInnis & Smith 1991).

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